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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,693	07/28/2003	Luc Struye	27500-169	5166
<div>7590 Joseph T. Guy Ph.D. Nexsen Pruet Jacobs & Pollard LLP 201 W. McBee Avenue Greenville, SC 29603</div>			<div>EXAMINER SUNG, CHRISTINE</div>	
			<div>ART UNIT 2884</div>	<div>PAPER NUMBER</div>
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
3 MONTHS			03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/628,693	STRUYE ET AL.	
	Examiner	Art Unit	
	Christine Sung	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. The amendment filed on December 8, 2006 has been accepted and entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoms (WO/0039809) (See Us Patent 6,974, 959 B1 for translation. For the purpose of this office action, all references have been made to the translation) in view of Kano (US Patent 5,012,107 A).

Regarding claims 1 and 5, Thoms discloses a stimuable phosphor screen (Figure 1) comprising:

a phosphor layer or storage layer (element 16)

characterized in that an intermediate layer arrangement (see figure 1) of an x-ray absorbing layer or Lead Layer (element 18) and a stimulated light reflecting foil (element 16) is present.

Thoms does not explicitly disclose a support or substrate layer beneath all of the layers. However, conventional stimuable phosphor screens/panels utilize a substrate in order to provide a surface to which other layers can be deposited and further provide structural support to the phosphor panel (see Kano, figure 2, element 1). Further, Kano teaches positioning the support layer beneath all of the other functional layers (i.e. phosphor layer, shielding layer and reflecting layers, see figure 2). One of ordinary skill in the art would be modify Thoms' invention with the conventional support layer as disclosed by Kano in order to reduce damage to the detector as well as provide a robust surface for vapor deposition to occur.

Regarding claims 2-4, Thoms discloses that the foil is made of lead but does not specify the exact compositions as claimed. However, lead cannot be applied directly to the substrate or device without a binder/matrix as it would not adhere to the surface and if applied directly would cause cracking and other unwanted results. Further the materials claimed are commonly used matrix materials, therefore one of ordinary skill in the art would be motivated to use such matrix materials with the invention as disclosed by Thoms in order to increase compatibility of the layers by controlling the matrix composition. (see pertinent art: Robinette discloses a conventional lead oxide screen used with x-ray devices (abstract) and discloses the absorbing layer is made of a lead oxide dispersed in a binder).

Regarding claims 6-10, Thoms discloses that the stimulated light reflecting foil (element 16) is made of aluminum (Column 2, line 64-65).

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Regarding claims 11-12, Kano discloses that the support is selected from the group consisting of ceramics, glass, metals such as aluminum and polymeric films (column 5, lines 8-23).

Regarding claims 13-16, Kano discloses a phosphor screen or panel, wherein said intermediate layer arrangement has a surface that has been subjected to embossing for forming a fine concavo-convex pattern (column 7, lines 35-37).

Regarding claims 17- 28, Kano further discloses a two or more protective layers (column 8, lines 22-27). Although he does not specify the exact positioning of the layer as disclosed in the instant claims, it would have obvious to one having ordinary skill in the art to have used a protective layer between the substrate and intermediate layers and/or between the phosphor and the intermediate layers in order to decrease the likelihood of damage from moisture exposure to the various layers of the detector.

5. Claims 29-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoms (WO/0039809) (See Us Patent 6,974, 959 B1 for translation. For the purpose of this office action, all references have been made to the translation) in view of Kano (US Patent 5,012,107 A) further in view of Hell (US Pre Grant Publication 2001/0007352 A1).

Regarding claims 29-32, Thoms in view of Kano discloses the limitations set forth in claims 1, 6, 11 and 12, respectively, and Kano further discloses a binderless phosphor (see claim 1). Kano further teaches that using a binderless phosphor significantly “improve[s] ...the charge ratio of the phosphor...” and also improves “the directivity of the stimulating light and stimulated emission in the stimuable layer. This results in an improvement of the sensitivity of the storage panel to radiation and, at the same time, an improvement in the sharpness of images.”

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(Column 2, lines 35-42). Further Kano discloses that the phosphor is made using a vapor deposition or sputtering technique (see column 2, lines 43-46). One of ordinary skill in the art would be motivated to use the phosphor layer as disclosed by Kano with the invention as disclosed by Thoms in order to increase the sharpness of the images as well as improve the sensitivity of the detector. Thoms nor Kano disclose a needle shaped phosphor crystal. However, such a shape is a known phosphor shape especially for those crystals that are deposited using a vapor deposition or sputtering technique. Hell discloses a storage phosphor with needle shaped crystals that are deposited by a vapor deposition process (see claim 9). One of ordinary skill in the art would be motivated to use a needle shaped crystal in order to increase the sharpness of the image.

Regarding claims 33-44, Hell discloses that the needle shaped crystal comprises CsX:Eu (paragraph [0030]).

Response to Arguments

6. Applicant's arguments filed December 8, 2006 have been fully considered but they are not persuasive.

7. Regarding claims 1-28, Applicant argues that the rejection is an improper combination because of the lack of motivation/suggestion to combine, because Applicant argues that the Thoms prior art reference is limited to bendable structures.

The examiner respectfully disagrees. Thoms' invention is directed toward an element for an x-ray imaging, generally (see column 1, lines 4-7). Thoms' discloses the purpose of his invention is to improve the sensitivity and resolution obtained by the storage element (column 1, lines 41-42). Thus, even though Thoms' discloses an dental application example, the invention as

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disclosed by Thoms' is not limited to just dental applications. The scope of Thoms' invention is directed to improving resolution for x-ray detection, generally.

Kano's invention is directed to an x-ray detection device for increasing sensitivity and sharpness of the storage element (column 2, lines 66-68). The reference to Kano was cited to show that conventional image storage elements contain a substrate (see figure 2, element 1). It was merely to provide support for a conventional substrate. One of ordinary skill in the art, at the time the invention was made, would know that substrates are conventional layering elements used to provide support to the detection elements. Thus one of ordinary skill in the art would be motivated to use the conventional substrate as disclosed by Kano with the invention as disclosed by Thoms' as supports offer structural reinforcement to the detector elements.

Applicant's argument regarding the modification/addition of the support of Kano with the detector disclosed by Thoms' is also not persuasive because nothing in the claims require the substrate to be a rigid substrate. Even if applicant's argument that a rigid substrate could not be used, flexible substrates for dental applications are also conventionally used in applications where such bendability is necessary, but not at a structural expense. Thus even if applicant's interpretation of the prior art were accepted, conventional flexible substrates are also known in the prior art and are conventionally used to allow for structural support to the device, but also allowing flexibility for applications such as a dental x-ray device.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the

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time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

8. Applicant further argues that the rejection of claims 29-44 under Thoms in view of Kano further in view of Hell are improper because they use improper hindsight and lack proper motivation.

Again, as stated above, applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Again as stated above, applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some

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teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 9-5 pm.

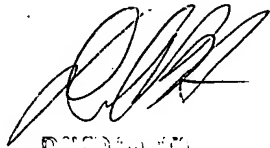
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christine Sung
Examiner
Art Unit 2884

CS



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